

SPECIFICATIONS FOR WORK

SPECIAL PROVISIONS

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1. PROJECT DESCRIPTION

The Project involves construction work associated with construction of approximately 1.25 miles of jackleg riparian pasture fence near Wise River and Wisdom MT, Wildlife & Parks (FWP) project # FWP 13-11, located in Beaverhead County, MT as identified in the project drawings.

2. PROJECT RELATED CONTACTS

Project contacts are designated as follows:

Owner:	Montana FWP 1420 E. Sixth Ave. PO Box 200701 Helena, MT 59620-0701	Project Representative:	Paul Valle FWP Project Manager 600 N. Park Ave. Helena, MT 59620-0701 406-841-4013 (wk) 406-431-3755 (cell) 406-841-4004 (fax)
Project field contact:	Emma Cayer FWP Biologist 730 N Montana St. Dillon MT. 59901 406-925-3050 (cell)		

3. SITE INSPECTION

All Bidders should satisfy themselves as to the construction conditions by personal examination of the site described in this document. Bidders are encouraged to make any investigation necessary to assess the nature of the construction and the difficulties to be encountered.

4. SOILS INFORMATION

Geotechnical investigation work has not been done for this Project. It is the responsibility of the Contractor to conduct all investigations and determine the soil type and digging conditions that may be encountered with this Project prior to bid preparation.

5. PROJECT REPRESENTATIVEING, INSPECTIONS, AND TESTING

The Contractor's work will be periodically tested and observed to insure compliance with the Contract Documents. Complete payment will not be made until the Contractor has demonstrated that the work is complete and has been performed as required. If the Project Representative detects a discrepancy between the work and the requirements of the Contract Documents at any time, up to and including final inspection, such work will not be completely paid for until the Contractor has corrected the deficiency.

The Project Representative will periodically monitor the construction of work to determine if the

work is being performed in accordance with the contract requirements. The Project Representative does not have the authority or means to control the Contractor's methods of construction. It is, therefore, the Contractor's responsibility to utilize all methods, equipment, manpower, and other means necessary to assure that the work is installed in compliance with the Drawings and Specifications, and laws and regulations applicable to the work. Any discrepancies noted shall be brought to the Contractor's attention, who shall immediately correct the discrepancy. Failure of the Project Representative to detect a discrepancy will not relieve the Contractor of his ultimate responsibility to perform the work as required.

The Contractor shall inspect the work as it is being performed. Any deviation from the Contract requirements shall be immediately corrected. Prior to any scheduled observation by the Project Representative, the Contractor shall again inspect the work and certify to the Project Representative that he has inspected the work and it meets the requirements of the Contract Documents. All buried work items shall be inspected by the Project Representative prior to backfilling, or may not be considered for payment.

The work will be subject to review by the Project Representative. The results of all such observations shall be directed to the Contractor only through the Project Representative.

5.1 Services Provided by the Contractor. The Contractor shall provide the following services:

- a. Any field surveys to establish locations, elevations, and alignments as stipulated on the Plans. FWP reserves the right to set preliminary construction staking for the project. The Contractor is responsible to notify FWP for any construction staking discrepancies.
- b. The Contractor shall provide the Project Representative with a written schedule indicating dates for specific testing and inspection services to be performed. The schedule shall be updated as required to give the Project Representative at least one week's advance notice. The Contractor shall notify the Project Representative immediately of any change or shall be subject to pay Project Representative fees as herein defined.

6. ENGINEERING INTERPRETATIONS

Timely Engineering decisions on construction activities or results have an important bearing on the Contractor's schedule. When engineering interpretation affects a plan design or specifications change, it should be realized that more than 24 hours may be required to gain the necessary Owner participation in the decision process including time for formal change order preparation as required.

7. REJECTED WORK

Any defective work or nonconforming materials or equipment that may be discovered at any time prior to the expiration of the warranty period, shall be removed and replaced with work or materials

which shall conform to the provisions of the Contract Documents. Any material condemned or rejected shall be removed at once from the project site. Failure on the part of the Project Representative to condemn or reject bad or inferior work or to note nonconforming materials or equipment on the Contractors submittals shall not be construed to imply acceptance of such work. The Owner shall reserve and retain all its rights and remedies at law against the Contractor and its Surety for correction of any and all latent defects discovered after the guarantee period.

The Project Representative will have the authority to reject work which does not conform to the Contract Documents and will provide the Owner with a list of defective work and nonconforming materials or equipment. The Owner will then promptly provide the Contractor with the list of defective work on nonconforming materials or equipment.

8. UTILITIES

The exact locations of existing underground utilities that may conflict with the work are not precisely known. It shall be the Contractor's responsibility to contact the owners of the respective utilities and arrange for field location services. **One Call Locators, 1-800-424-5555**

8.1 Notification. The Contractor shall contact, in writing, all public and private utility companies that may have utilities that may be encountered during excavation. The notification includes the following information:

- a. The nature of the work that the Contractor will be performing.
- b. The time, date and location that the Contractor will be performing work that may conflict with the utility.
- c. The nature of work that the utility will be required to perform such as moving a power pole, supporting a pole or underground cable, etc.
- d. Requests for field location and identification of utilities.

A copy of the letter of notification shall be provided to the Project Representative. During the course of construction, the Contractor shall keep the utility companies notified of any change in schedule or nature of work that differs from the original notification.

8.2 Identification. All utilities that may conflict with the work shall be the Contractor's responsibility to locate before any excavation is performed. Field markings provided by the utilities shall be preserved by the Contractor until actual excavation commences. All utility locations on the Drawings should be considered approximate and should be verified in the field by the Contractor. The Contractor shall also be responsible for locating all utilities that are not located on the Drawings.

8.3 Removal or Relocation of Utilities. All electric power, street lighting, gas, telephone, and television utilities that require relocation will be the responsibility of the utility owner. A request for extending the specified contract time will be considered if

utility owners cause delays.

- 8.4 Public Utilities. Water, sewer, storm drainage, and other utilities owned and operated by the public entities shall, unless otherwise specifically requested by the utility owner, be removed, relocated, supported or adjusted as required by the Contractor at the Contractor's expense. All such work shall be in accordance with these Specifications, or the Owner's Standard Specifications or written instructions when the work involved is not covered by these Specifications.
- 8.5 Other Utilities. Utilities owned and operated by private individuals, railroads, school districts, associations, or other entities not covered in these Special Provisions shall, unless otherwise specifically requested by the utility owner, be removed, relocated, supported or adjusted as required by the Contractor at the Contractor's expense. All work shall be in accordance with the utility owner's directions, or by methods recognized as being the standard of the industry when directions are not given by the owner of the utility.
- 8.6 Damage to Utilities and Private Property. The Contractor shall protect all utilities and private property and shall be solely responsible for any damage resulting from his construction activities. The Contractor shall hold the Owner and Project Representative harmless from all actions resulting from his failure to properly protect utilities and private property. All damage to utilities shall be repaired at the Contractor's expense to the full satisfaction of the owner of the damaged utility or property. The Contractor shall provide the Owner with a letter from the owner of the damaged utility or property stating that it has been repaired to the utility owner's full satisfaction.
- 8.7 Structures. The Contractor shall exercise every precaution to prevent damage to existing buildings or structures in the vicinity of his work. In the event of such damages, he shall repair them to the satisfaction of the owner of the damaged structure at no cost to the Owner.
- 8.8 Overhead Utilities. The Contractor shall use extreme caution to avoid a conflict, contact, or damage to overhead utilities, such as power lines, streetlights, telephone lines, television lines, poles, or other appurtenances during the course of construction of this project.
- 8.9 Buried Gas Lines. The Contractor shall provide some means of overhead support for buried gas lines exposed during trenching to prevent rupture in case of trench caving.
- 8.10 Survey Markers and Monuments. The Contractor shall use every care and precaution to protect and not disturb any survey marker or monuments, such as those that might be located at lot or block corners, property pins, intersection of street monuments or addition line demarcation. Such protection includes markings with flagged high lath

and close supervision. No monuments shall be disturbed without prior approval of the Project Representative. Any survey marker or monument disturbed by the Contractor during the construction of the project shall be replaced at no cost to the Owner by a licensed land surveyor.

The Contract Plans may show utility locations based on limited field observation and information provided to the Project Representative by others. **The Project Representative cannot guarantee their accuracy.** The Contractor shall immediately notify the Project Representative of any discrepancies with utility locations as shown on the Contract Drawings and/or their bury depths that may in any way affect the intent of construction as scoped in these specifications.

There will be no separate payment for exploratory excavation required to locate underground utilities.

9. CONSTRUCTION SAFETY

The Contractor shall be solely and completely responsible for conditions of the jobsite, including safety of all persons (including employees) and property during performance of the work. This requirement shall apply continuously and not be limited to normal working hours. Safety provisions shall conform to U.S. Department of Labor (OSHA), and all other applicable federal, state, county, and local laws, ordinances, codes, and regulations. Where any of these are in conflict, the more stringent requirement shall be followed. The Contractor's failure to thoroughly familiarize himself with the aforementioned safety provisions shall not relieve him from compliance with the obligations and penalties set forth therein.

10. CONSTRUCTION LIMITS AND AREAS OF DISTURBANCE

10.1 Construction Limits. Where construction easements or property lines, are not specifically called out on the Plan Drawings, limit the construction disturbance to 10 feet when measured from the edge of the slope stake grading, or to the adjacent property line, whichever is less. Disturbance and equipment access beyond this limit is not allowed without the written approval of both the Project Representative and the owner of the affected property. If so approved, disturbance beyond construction limits shall meet all requirements imposed by the landowner; this includes existing roads used and/or improved as well as the construction of new access roads. Special construction, reclamation, or post-construction road ripping or other closure provisions required by the landowner on access roads beyond the construction limits shall be performed by the Contractor at no additional cost to the Owner.

10.2 Areas of Disturbances. Approved areas of disturbance are those areas disturbed by construction activities within the construction limits and along designated or approved access routes. Such areas may require reclamation and revegetation operations, including grading to the original contours, top soiling with salvaged or imported topsoil, seeding, fertilizing, and

mulching as specified herein. Other areas that are disturbed by the Contractor's activities outside of the limits noted above will be considered as site damage or unapproved areas of disturbance subject to Repair and Replacement Quality as specified in the General Conditions. This includes areas selected by the Contractor outside the defined construction limits for mobilization, offices, equipment, or material storage.

11. PROTECTION OF ADJACENT IMPROVEMENTS

Retain and protect all adjacent improvements not called for removal on the drawings. Restore all damaged items to pre-existing condition.

12. TREE PROTECTION AND PRESERVATION

The Contractor and the Owner shall individually inspect all trees within the project construction limits prior to construction. The Owner shall determine which trees are to be removed and which trees are to be preserved. Construction of the grading, utilities and various roadway facilities must not, in the opinion of the Project Representative, significantly damage the trees root system or hinder it's chances for survival. Reasonable variations from the plans, as determined by the Project Representative, may be employed to ensure the survival of trees.

13. CONSTRUCTION SURVEYS

Contractor shall be aware of property pins and survey monuments. Damage to these pins will require replacement of such by a registered land surveyor at no cost to the owner.

14. MATERIAL SOURCES AND CONSTRUCTION WATER

The Contractor shall be responsible for locating all necessary material sources, including aggregates, earthen borrow and water necessary to complete the work. The Contractor shall be responsible for meeting all transportation and environmental regulations as well as paying any royalties. The Contractor shall provide the Project Representative with written approvals of landowners from whom materials are to be obtained prior to approval.

The Contractor may use materials from any source, providing the materials have been tested through representative samples and will meet the Specifications.

Water for compaction efforts shall be supplied by the Contractor.

15. MATERIALS SALVAGE AND DISPOSAL

If the Owner requests to salvage material removed from the project, notify the Owner within 24 hours prior to delivery at a specific location approved by the Owner.

Haul and waste all excavated material to a legal site and obey all state, county, and local disposal

restrictions and regulations.

16. STORED MATERIALS

Contractor shall use an approved storage area for materials. Materials and/or equipment purchased by the Contractor may be paid for on a monthly basis providing invoices for said materials and equipment are presented to the Project Representative, and such materials have been approved through the submittal process are stored and insured.

17. STAGING AND STOCKPILING AREA

Contractor shall use staging and stockpiling sites for temporary traffic control devices and equipment as approved by the Owner. Contract drawings may show approved staging and stockpiling locations. Notify Owner within 24 hours for approval of staging and stockpiling sites not shown on the contract drawings.

18. SECURITY

The Contractor shall provide all security measures necessary to assure the protection of equipment, materials in storage, completed work and the project in general.

19. CLEANUP

Cleanup for each item of work shall be fully completed and accepted before the item is considered final. If the Contractor fails to perform cleanup within a timely manner the Owner reserves the right to shut down construction activities.

20. ACCESS DURING CONSTRUCTION

Provide access to all public and private roadways and approaches along the project throughout the construction period.

21. CONSTRUCTION TRAFFIC CONTROL

The contractor is responsible for providing safe construction and work zones within the project limits by implementing the rules, regulations, and practices of the Manual on Uniform Traffic Control Devices, current edition.

22. SANITARY FACILITIES

On-site toilet facilities for employees of Contractor and Subcontractors shall be provided and maintained in a sanitary condition.

23. RECORD DRAWINGS

The Contractor's Superintendent shall maintain at the project site, a "Record Set of Drawings" showing field changes, as-built elevations, unusual conditions encountered during construction, and such other data as required to provide the Owner with an accurate "as constructed" set of record drawings. The Contractor shall furnish the "Record Set" to the Project Representative following the Final Inspection of the Project.

The Contractor's final estimate and final payment will not be processed until the "Record Set" of drawings are received and approved by the Project Representative.

24. PROPOSAL ITEM DESCRIPTIONS AND ESTIMATED QUANTITIES

HARRINGTON FENCE

1. Mobilization/Demobilization:

*Description: This bid item shall consist of the preparatory work and operations necessary performed by the Contractor for the movement of personnel, equipment, supplies, and incidentals to and from the work site. The work includes those actions necessary for obtaining necessary permits required for mobilization; for the establishment of all offices and facilities necessary to work on the project; for premiums on contract bonds; for insurance for the contract; and for other work on the various items on the project site. Mobilization costs for subcontracted work shall be considered to be included.

* Estimated Quantity:

- 1 lump sum

2. Jackleg and rail fence

* Description: This bid item includes all equipment, labor, materials and associated work for the installation of jackleg rail fence (four rails on the flat with a rub rail and a top rail) as defined in the specifications and drawings.

* Estimated Quantity:

- 1,365 linear feet

3. Jackleg and 4wire fence

* Description: This bid item includes all equipment, labor, materials and associated work for the installation jackleg four wire fence with Jack leg brace panels, as noted in the specifications and drawings.

* Estimated Quantity:

- 3,900 linear feet

4. Re-pound existing wood posts

* Description: This bid item includes all equipment, labor, materials and associated work for the re-pounding of existing loose wood posts including re-installation of the barbwire as defined in the specifications and drawings.

* Estimated Quantity:

- 450 linear feet lump sum

5. Jackleg brace panels

* Description: This bid item includes all equipment, labor, materials and associated work for the installation jackleg brace panels, as noted in the

- specifications and drawings.
- * Estimated Quantity:
 - 20 each
- 6. Fence removal and material salvage
 - * Description: This bid item includes all equipment, labor, materials and associated work for the removal of existing four wire fence and salvage of posts and gates. Salvaged materials shall be delivered to the FWP office in Dillon MT, as noted in the specifications and drawings.
 - * Estimated Quantity:
 - 5280 linear feet

RALSTON FENCE

1. Mobilization/Demobilization:
 - * Description: This bid item shall consist of the preparatory work and operations necessary performed by the Contractor for the movement of personnel, equipment, supplies, and incidentals to and from the work site. The work includes those actions necessary for obtaining necessary permits required for mobilization; for the establishment of all offices and facilities necessary to work on the project; for premiums on contract bonds; for insurance for the contract; and for other work on the various items on the project site. Mobilization costs for subcontracted work shall be considered to be included.
 - * Estimated Quantity:
 - 1 lump sum
2. Re-staple and replace missing stays
 - * Description: This bid item includes all equipment, labor, materials and associated work for the re-stapling of all existing stays with fence staples and replacing all missing stays as defined in the specifications and drawings.
 - * Estimated Quantity:
 - 825 to be re-stapled and 100 to be replaced
3. Convert two post panels to three post panels
 - * Description: This bid item includes all equipment, labor, materials and associated work for replacing or changing all two post (single) panels to three post (double panels) as defined in the specifications and drawings.
 - * Estimated Quantity:
 - 32 lump sum
4. Construct new wood post and four wire fence
 - * Description: This bid item includes all equipment, labor, materials and associated work for the installation of wood post four wire fence with double brace panels as defined in the specifications and drawings.
 - * Estimated Quantity:
 - 1500 linear feet
5. Replace and Re-pound existing wood posts
 - * Description: This bid item includes all equipment, labor, materials and associated work for the replacing wood posts and re-pounding of existing loose

wood posts including re-installation of the barbwire as defined in the specifications and drawings.

* Estimated Quantity:

- Replace 31 posts re-pound 20 lump sum

6. Re-pair deadman and broken wires

* Description: This bid item includes all equipment, labor, materials and associated work for the re-pair of 4 existing deadmen and repairing any broken wires.

* Estimated Quantity:

- 1 lump sum

SECTION 02839 FENCING

SITE CLEARING

1. DESCRIPTION

This work shall consist of clearing, grubbing, removing, and disposing of vegetation and debris within the limits indicated on the plans, except such objects as are designated to remain or are to be removed in accordance with other sections of these Specifications. This work shall also include the preservation from injury of vegetation and objects designated to remain. The work shall be classified as follows:

- A. "Clearing" shall include the disposal of stumps, brush, windfalls, limbs, sticks, piles of sawdust, rubbish, debris, vegetation, and other objectionable material occurring within the clearing limits or which interfere with excavation or embankment.
- B. "Grubbing" shall consist of the removal from the ground and the disposal of roots, stumps, together with duff, matter, roots, and debris from the grubbing limits.

2. CONSTRUCTION METHODS

- A. General. The Project Manager will establish the area to be cleared and/or grubbed. All other areas shall be considered as designated to remain. The Contractor shall preserve all things designated to remain.
- B. Construction.
 - (1) No stumps or roots shall remain more than 4 inches above the ground along the fence line.
 - (2) Low hanging branches and unsound or unsightly branches on trees or shrubs designated to remain shall be removed as directed. Width of clearing for fence line shall be four feet.

3. DISPOSAL

- A. Stumps, brush, windfalls, limbs, sticks, piles of sawdust, rubbish, debris, vegetation, and other objectionable material occurring within the clearing limits shall be piled at designated locations on the property and burned. Locations to be designated by the Project Manager and the landowner.

4. MEASUREMENT AND PAYMENT

- A. Measurement or payment shall be made for site clearing and grubbing but will be lump sum and obligation of the Contractor, and all costs in connection therewith shall be included in the price bid.

POST AND WIRE FENCE INSTALLATION

1. DESCRIPTION

Work under this specification shall consist of furnishing materials, erecting and constructing new fence of barbed wire fastened to wood posts, constructing corners, and installing gates, and performing similar operations, all in conformity with specifications, plans, drawings, and other instruction.

2. MATERIALS

- A. Barbed wire shall be zinc-coated, steel barbed wire meeting the requirements of ASTM A-121. Breaking strength of strand wire shall be not less than 950 pounds. Barbs shall be uniformly spaced from 4 to 5 inches apart. Minimum weight of zinc coating shall be Class I. Wire shall consist of two twisted strands of 12 1/2 gage strands. "Red Brand" and "OK Brand Premium" are examples of wire that meet ASTM A-121. **Wire breaking strength and coating certification shall be provided to the Project Manager.**
- B. Staples: Wire staples of the barbed U-shaped type shall be used to fasten the wire fencing to the wooden posts. They shall be not less than 9 gage galvanized, 1-3/4 inches long.
- C. Nails: Shall be 40 d common galvanized or 40 d vinyl coated.
- D. Stays shall be round wood 2-inch minimum diameter untreated and attached to fence by staple.
- E. Wood jack leg brace panel posts shall be made from western larch, lodgepole pine, ponderosa pine, or douglas-fir. They shall have the bark removed, be well seasoned, sound, and straight-grained. They shall be finished round. Jack legs shall be 5 inch minimum diameter and minimum 66" long machine notched. All posts shall be treated with a solution conforming to AWPAs standards. Penetration shall be at least 1/2 inch. Treatment shall extend the entire length of the post per AWPAs standards. **Certification of AWPAs treatment shall be provided to the Project Manager.**

- F. Fasteners shall be 7 or 8" TimberLok® heavy duty wood screws or approved equal. Two screws required per jack connection, one screw required per rail connection. No screw or nail protrusions are allowed.
- G. Deadmen anchors shall be used at grade depressions. They shall consist of a plate or disc of 10 gauge or thicker mild steel of 12-inch diameter. A No. 5 rebar shall be welded in the center and a loop formed in the other end to accept the tie wire. Rebar length shall be 30 inches after the loop is formed.

Alternately, two steel fence posts may be driven in the ground at an angle such that the ends above the ground cross at the low point. Wire shall be securely attached to the two posts and used to anchor the fence. Duckbill anchors are also approved. Other anchor types may be accepted upon approval of the Engineer or Project Manager.

Anchor wires shall be tied such that all wire is above the soil surface. No anchor wire shall be buried. If any part of the deadman projects out from the fenceline above ground, it shall be cut off no more than 4" from the anchor

- H. Wood Line Posts: Wood Line Post shall be made from western larch, lodgepole pine, ponderosa pine, or Douglas fir. They shall have bark removed, be well seasoned, sound, and straight-grained. They shall be finished round. Posts shall be 5-inch minimum diameter and 7 feet in length. Post shall be treated with a solution conforming to AWPA standards. Penetration shall be at least ½ inch or to the point of rejection. Post shall be fully treated. Posts that are to be driven shall be tapered and treated.
- J. Stream Crossings. Stream crossings shall be minimum 50' wide and use 21' barked rails. Jackleg brace panels shall be installed on both sides of the stream crossings. The remaining stream crossing fence shall be jackleg and rail fence with jackleg brace panels installed the same as specified for line fence panels.
- K. Fence removal, remove and dispose of the existing fence identified in the plans, including, wire, braces, gates, and hardware as shown in the project drawings or as directed by the project manager. All posts and metal gates shall be salvaged and transported to the FWP office in Dillon. All other removed fence material becomes the property of the contractor. Dispose of all removed fence material off the project site and obey all state, county, and local disposal restrictions and regulations.

3. CONSTRUCTION METHODS

- A. Post holes and excavations for footings and anchors shall be excavated on the lines established by the Project Manager to the depths and cross-sections shown on the standard drawings. Wooden posts may be driven when so prepared and any damaged posts shall be repaired or rejected. Post shall be plumb when set.
- B. All posthole filling and backfilling work shall be in six-inch layers and each layer shall be solidly tamped and compacted as it is placed.
- C. Posts that are cut or trimmed for any valid reason shall have two coats of preservative material applied as approved by the Project Manager.
- D. Deadmen or anchors will be used at grade depressions, angle points, and other places where unusual stresses will be exerted on the fence.
- E. Brace panels shall be jackleg panels and installed at angle points, corners, gates, or wherever a break in the terrain occurs however, in no case shall anchor points be more than 30 rods apart. **See Table 1** for brace panel installation requirements.

Table 1. Brace Panel Installation Requirements			
Panel Type	No. of Panels	Location Applications	
		Horizontal	Vertical
Double	2	In Line, Each side of stream crossings	Constant Grade
Double	2	Angle points < 90° Each side of gates	Grade Breaks < 45°
Corner	4	90° Corners	Grade Breaks > 45°
Jackleg	1	Jackleg fence sections	

- F. All posts shall be plumb and solidly set in place after backfilling or driving has been completed.
- G. Stretching by a motor vehicle will not be permitted; the power must be by or through a mechanical stretcher or device designed for such use.
- H. Fence line shall be straight and square between corner points where new fencing is being installed.

- I. Tension shall be applied in accordance with wire manufacturer's recommendations.
- J. Fence wire shall be wrapped around terminal posts and fastened to itself with at least four turns. Fence wire, in general, shall be placed on the side of the post opposite the site but on curves shall be placed so the force is against the post. At grade depressions and alignment angles, where stresses tending to pull posts from the ground are created, the wire fence shall be snubbed or guyed at the critical points by brace wire attached to each horizontal line of fence wire and the end of the combined strands being firmly attached to a "deadman" or to an approved "anchor" at a point which will serve best to resist the pull of the wire fence. "Deadmen" also may be fastened to posts.
- K. U-shaped staples shall be driven diagonally across the wood grain so that both points do not enter between the same grain. In depressions where wire up-lift occurs, staples shall be sloped slightly upward, against the pull of the wire. On level ground and over knolls, staples shall be sloped slightly downward. Wire shall be stapled tightly at corner, end, and pull posts. In no case shall staples be driven so tight as to damage the wire.
- L. A cross-fence, not the property of the Owner, shall not be fastened to the Owner's fence but shall be terminated, in a workmanlike manner, adjacent thereto.
- M. Upon completion, the fence shall be true to line and grade; all posts shall be vertical and firm and all wire shall be taut and the completed fence shall be completely acceptable in all respects; no openings shall be left that will permit stock or animals to pass through the fence.
- N. Weed Control: All equipment used during construction shall be thoroughly washed both inside, outside, underneath, pickup boxes, trailer's, trucks etc. before entrance to the project area. Vehicles used to commute to and from job site shall be kept clean as not to transport weed seed to project area. This cost shall be subsidiary to the project and considered incidental thereto and no payment shall be made for it.

MEASUREMENT AND PAYMENT

1. METHODS OF MEASUREMENT

- A. All types of fence will be measured by the linear foot complete in place, on its actual alignment, exclusive of gates, brace panels and corners. The measurement will be made on the fence line along the ground, from end post to end post, including wing fences to structures, the intent being to measure the actual length of fence in place.

- B. Gates will be measured on a per each basis including gate brace panel modifications.
- C. Brace panels shall be measured on a per each basis.
- D. Deadmen anchors and any line clearing required shall be subsidiary to the fence and considered incidental thereto.
- E. Fence removal and material salvage will be measured on a per foot basis, on its actual alignment, exclusive of gates. The measurement will be made on the fence line along the ground, from end post to end post, including wing fences to structures, the intent being to measure the actual length of fence removed.

2. BASIS OF PAYMENT

- A. All types of fence shall be paid for on a linear foot basis, measured as specified above.
- B. Gates will be paid for on a unit price per each basis including modified brace panels.
- C. Brace panels will be paid for on a per each basis.
- D. Payment for the various items specified above shall be full compensation for furnishing all labor, materials, tools, and equipment necessary or incidental to the construction of the complete fence and gates, including excavation, backfilling anchors, tamping, miscellaneous hardware, smoothing the irregularities of the ground at fence site, and disposing of all debris, all to the satisfaction of the Project Manager.
- E. Fence removal and material salvage will be paid on a linear foot basis measured as specified above.

END OF SECTION

SECTION 02842

WIRE / RAIL JACK LEG FENCE

PART 1 GENERAL

1.1 DESCRIPTION

- A. This work consists of furnishing, erection, and placement of new fencing per the drawings and specifications.

PART 2 PRODUCTS

2.1 GENERAL

- A. Barbed wire shall be zinc-coated, steel barbed wire meeting the requirements of ASTM A-121. Breaking strength of strand wire shall be not less than 950 pounds. Barbs shall be uniformly spaced from 4 to 5 inches apart. Minimum weight of zinc coating shall be Class I. Wire shall consist of two twisted strands of 12 ½ gage wire. "Red Brand" and "OK Brand Premium" are examples of wire that meet ASTM A-121. **Wire breaking strength and coating certification shall be provided to the Project Manager.**
- B. Barbless wire shall be two smooth twisted strands of 12 ½ gage wire: zinc coated steel meeting requirements of ASTM A-121 or equal. Breaking strength of a strand of wire shall be not less than 950 pounds, minimum weight of zinc coating shall be Class I.
- C. Staples. Wire staples of the barbed U-shaped type shall be used to fasten the wire fencing to the wooden posts. They shall be not less than 9 gage galvanized, 1-3/4 inches long.
- D. Wood jack leg posts shall be made from western larch, lodgepole pine, ponderosa pine, or douglas-fir. They shall have the bark on, be well seasoned, sound, and straight-grained. Jack legs shall be 5 inch minimum diameter, minimum 66" long. Posts shall be machined, cut, and notched for universal matching.
- G. Wood jack leg brace rails shall be made from western larch, lodgepole pine, ponderosa pine, or douglas-fir. They shall have the bark on, be well seasoned, sound, and straight-grained. They shall be finished round. Rails shall be 3 inch minimum diameter, minimum 21 feet long.

- H. Fasteners shall be 8" TimberLok® heavy duty wood screws or approved equal. Two screws required per jack connection, one screw required per rail connection. No screw or nail protrusions are allowed.
- I. Deadmen anchors shall be used at grade depressions and brace panels. They shall consist of a plate or disc of 10 gauge or thicker mild steel of 12-inch diameter. A No. 5 rebar shall be welded in the center and a loop formed in the other end to accept the tie wire. Rebar length shall be 30 inches after the loop is formed.

Alternately, two steel fence posts may be driven in the ground at an angle such that the ends above the ground cross at the low point. Wire shall be securely attached to the two posts and used to anchor the fence. Duckbill anchors are also approved. Other anchor types may be accepted upon approval of the Engineer or Project Manager.

Anchor wires shall be tied such that all wire is above the soil surface. No anchor wire shall be buried. If any part of the deadman projects out from the fenceline above ground, it shall be cut off no more than 4" from the anchor wire attachment. No sharp edges shall remain on cut ends.

PART 3 EXECUTION

3.1 CLEARING AND GRUBBING

- A. "Clearing" shall consist of the falling of trees greater than 3 inches diameter at chest height, delimbing them, and cutting into six-foot sections. Clearing shall also include the disposal of stumps, brush, windfalls, limbs, sticks, piles of sawdust, rubbish, debris, vegetation, and other objectionable material occurring within the clearing limits or which interfere with excavation or embankment.
- B. "Grubbing" shall consist of the removal from the ground and the disposal of roots, stumps, together with duff, matter, roots, and debris from the grubbing limits.
- C. Construction methods for clearing and grubbing operations are as follows:
 - 1. No stumps or roots shall remain more than 4 inches above the ground along the fence line.
 - 2. Low hanging branches and unsound or unsightly branches on trees or shrubs designated to remain shall be removed as directed. Branches of trees extending over the fence line shall be trimmed to give a clear

height of 8 feet above the ground along the fence line. Width of clearing for fence line shall be 6 feet.

3.2 FENCE INSTALLATION

- A. All boundary fences shall be located one foot inside actual boundary line on the owner's property.
- B. Jacklegs shall be set in place perpendicular to the ground.
- C. Rails shall be coped and attached to the posts.
 - 1. Starting panels, ending panels, gate panels, corner panels and brace panels every 500 foot, shall be braced diagonally.
 - 2. Jacklegs in brace panels shall be spaced approximately 10 feet apart and brace rail lengths shall be 21 feet minimum.
 - 3. Brace rails shall be attached to the jack legs and to each other at the center of the overlap with heavy duty wood screws.
 - 4. Jacklegs in the wire fence shall be spaced approximately 20 feet apart.
 - 5. When completed, the fence shall be solid.
- D. Posts that are cut or trimmed for any valid reason shall be given **two coats of preservative material** approved by the Engineer.
- E. Fence line shall be straight and square between corner points. No openings shall be left that will permit stock to pass through the fence.
- F. Stretching by a motor vehicle will not be permitted; the power must be by or through a mechanical stretcher or device designed for such use.
- G. Tension shall be applied in accordance with wire manufacturer's recommendations.
- H. U-shaped staples shall be driven diagonally across the wood grain so that both points do not enter between the same grain. In depressions where wire up-lift occurs, staples shall be sloped slightly upward, against the pull of the wire. On level ground and over knolls, staples shall be sloped slightly downward. Staples shall be driven snugly to hold the jacklegs in place. Wire shall be fastened securely at corner, end, and pull posts. In no case shall staples be driven so tight as to damage the wire.

- I. A cross-fence, not the property of the Owner, shall **not** be fastened to the Owner's fence but shall be terminated, in a workmanlike manner, adjacent thereto.
- J. Weed Control: All equipment used during construction shall be thoroughly washed both inside, outside and underneath of all pickup boxes, trailers, trucks, etc. before entrance to the project area. Vehicles used to commute to and from job site shall be kept clean so as not to transport weed seed to project area. This cost shall be subsidiary to the project and shall not constitute a pay item and shall be considered incidental thereto and no payment shall be made for it.

PART 4 MEASUREMENT AND PAYMENT

4.1 BASIS OF MEASUREMENT

- A. All types of fence will be measured by the linear foot complete in place, on its actual alignment, **Exclusive** of brace panels, corners, and gates, or wire fence panels at the ends. The measurement will be made on the fence line along the ground, from end post to end post, less the length of gates, the intent being to measure the actual length of fence in place.
- B. Any fence line willow clearing required **shall be a lump sum pay item and shall be included in the designated line item.**

4.2 BASIS OF PAYMENT

- A. All types of fence shall be paid for on a per foot basis, **excluding panels** measured as specified above. Panels shall be paid for separately at the bid unit price.

END OF SECTION 02842